intermingled with a plurality of the labels generating different identifiable spectra having signals with a first wavelength; and

a detector simultaneously imaging at least some of the spectra upon a surface for identification of the labels.

3. (Previously Amended) The system of claim 1, wherein the labels comprise at least one semiconductor nanocrystal.

4. (As filed) The system of claim 2, wherein each label comprises at least one population of semiconductor nanocrystals, each population generating a signal having a population wavelength in response to the excitation energy.

5. (As filed) The system of claim 4, wherein at least some of the labels comprise a plurality of the populations supported by a matrix.

6. (As filed) The system of claim 1, further comprising at least one probe body including a label and an associated assay indicator marker, the indicator markers generating indicator signals in response to an interaction between the probe body and an associated test substance so as to indicate results of an assay.

7. (As filed) The system of claim 1, wherein the simultaneously imaged labels are distributed across a two-dimensional sensing field.

8. (As filed) The system of claim 7, wherein the detector comprises a diffractor and a sensor, and wherein each label is sufficiently smaller than the sensing field so that the spectra can be wavelength-dispersed by the diffractor without excessive overlap of the dispersed spectra upon the sensor.

9. (Amended) The system of claim 7 [1], wherein the detector comprises a light sensor and a diffractor, the diffractor disposed between the sensing field and the light sensor, the sensor simultaneously sensing the spectra from the plurality of labels.

10. (Amended) The system of claim 9, wherein an open optical path extends from the sensing field to the diffractor and from the diffractor to the sensor, the sensor comprising an areal sensor and having the surface, the open optical path having an open cross-section with significant first and second open orthogonal dimensions.

11. (As filed) The system of claim 10, wherein no slit aperture is disposed along the optical path to restrict the sensing field, and wherein the diffractor comprises an element selected from the group consisting of a prism, a dispersive reflective grating, and a dispersive transmission grating.

12. (Previously Amended) The system of claim 1, further comprising a spatial position indicator to identify label positions within a sensor field of the detector, wherein the detector senses relative spectral data.

13. (As filed) The system of claim 12, further comprising a spectral analyzer coupled to the label position indicator and the detector, the analyzer deriving absolute wavelengths of the spectra in response to the relative spectral data and the identified label positions.

14. (As filed) The system of claim 13, further comprising a first beam splitter disposed to optically couple the label position indicator with the sensing filed along a positioning optical path, and to optically couple the detector with the sensing field along a spectral optical path.

15. (As filed) The system of claim 14, wherein the detector comprises an areal sensor and wherein the label position indicator comprises a processing module, the first beam splitter directing a first energy from the sensing field, past a diffractor and toward the areal sensor for generating spectral data, the first beam splitter directing a second energy from the sensing field to a position indicator for generation of position data.

16. (As filed) The system of claim 13, further comprising a second beam splitter disposed along an optical path from the sensing field, wherein a first dispersion member is disposed in the spectral optical path so as to disperse wavelengths of the spectra along a first axis, and wherein a second dispersion member is optically coupled to the second beam splitter so as to disperse wavelengths of the spectra along a second axis, the first axis at an angle to the second axis relative to the sensing field for resolving spectral ambiguities of overlapping wavelengths along the first axis.

17. (Previously Amended) The system of claim 1 wherein the detector comprises means for distributing the signals across a sensor in response to wavelengths of the signals and positions of the labels in a sensor field, the distributing means disposed between the sensing field and the sensor.

18. (As filed) The system of claim 17, further comprising means for determining positions of the labels within the sensing field, and a spectral analyzer coupled to the positioning means and the sensor, the analyzer determining the spectra.

19. (As filed) The system of claim 18, wherein the positioning means comprises either an areal sensor and a beam splitter, or a calibration reference signal within the at least some spectra.

58. (Amended) A system comprising:

a plurality of spatially resolved labels generating identifiable spectra in response to excitation energy, wherein at least some of the spectra comprise a plurality of signals for each label;

a detector simultaneously imaging the spectra upon a surface of a sensor **[for identification of the labels]**, the detector comprising a dispersion member dispersing wavelengths of the spectra across the surface of the sensor; **[and]**

a spatial position indicator to identify label positions within a sensor field of the detector; and

an analyzer determining the spectra in response to the dispersed spectra and the label positions for identification of the labels.

59. (New) The system of claim 1, wherein the plurality of labels having signals with the first wavelength comprise a first family of labels, wherein a first label of the first family includes an associated second signal defining a second wavelength, and wherein a plurality of labels of the first family include associated second signals having wavelengths which are different than the second wavelength.

60. (Based on Prior claim 10) A system comprising:

a plurality of spatially resolved labels generating identifiable spectra in response to excitation energy;

a detector comprising an areal light sensor and a diffractor, the detector simultaneously imaging at least some of the spectra upon a surface of sensor, the simultaneously imaged labels distributed across a two-dimensional sensing field, the diffractor disposed between the sensing field and the light sensor with an open optical path extends from the sensing field to the diffractor and from the diffractor to the sensor, the open optical path having an open cross-section with significant first and second open orthogonal dimensions, the sensor simultaneously sensing the spectra from the plurality of labels; and

an analyzer coupled to the detector, the analyzer identifying the labels in response to the simultaneously sensed spectra.

61. (Based on Prior claim 13) A system comprising:

a plurality of spatially resolved labels generating different identifiable spectra in response to excitation energy, wherein at least some of the spectra comprise multiple-signal spectra defining a plurality of wavelengths;

a detector simultaneously imaging at least some of the spectra upon a surface;

a spatial position indicator to identify label positions within a sensor field of the detector, wherein the detector senses relative spectral data; and

a spectral analyzer coupled to the label position indicator and the detector, the analyzer deriving absolute wavelengths of the spectra in response to the relative spectral data and the identified label positions so as to identify of the labels.

62. (Based on Prior claim 18) A system comprising:

a plurality of labels generating identifiable spectra in response to excitation energy, wherein at least some of the spectra comprise multiple-signal spectra defining a plurality of wavelengths, the wavelengths from the spectra being intermingled; and

a detector simultaneously imaging at least some of the spectra upon a surface of a sensor, the detector including means for distributing the signals across the surface in response to wavelengths of the signals and positions of the labels in a sensor field, the distributing means disposed between the sensing field and the sensor;

means for determining positions of the labels within the sensing field; and

a spectral analyzer coupled to the positioning means and the sensor, the analyzer determining the spectra for identification of the labels.